

SECTION I.—AEROLOGY.

SOLAR AND SKY RADIATION MEASURED AT WASHINGTON, D. C., DURING AUGUST, 1915.

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[Dated: Washington, D. C., Sept. 18, 1915.]

In Table 1 are summarized the measurements of the intensity of direct solar radiation made by the Weather Bureau at the American University,¹ Washington, D. C., during August, 1915. The means for the month do not differ materially from the 5-year means published in the Bulletin of the Mount Weather Observatory, 1912, 5:182, Table 3. Not much weight should be given to August means, however, as there are generally but few days in this month when the sky at Washington is suitable for radiation measurements. A maximum noon radiation reading of 1.29 was obtained on August 19, 1915, as compared with an absolute noon maximum for August of 1.40.

Skylight polarization, measured at solar distance 90° and in his vertical, with the sun at zenith distance 60°, averaged 45 per cent, with a maximum of 49 per cent on the 19th. This latter is 9 per cent less than the average maximum polarization for August published in the Bulletin of the Mount Weather Observatory, 1910, 3:114, Table 16.

TABLE 1.—Solar radiation intensities at Washington, D. C., during August, 1915.

[Gram-calories per minute per square centimeter of normal surface.]

Date.	Sun's zenith distance.										
	0.0°	48.5°	60.0°	66.5°	70.7°	73.6°	75.7°	77.4°	78.3°	79.8°	80.7°
	Air mass.										
	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0
1915.											
A. M.	Gr.-cal.	Gr.-cal.	Gr.-cal.	Gr.-cal.	Gr.-cal.	Gr.-cal.	Gr.-cal.	Gr.-cal.	Gr.-cal.	Gr.-cal.	Gr.-cal.
August 4.....	1.26	1.13									
7.....		1.01									
8.....			0.98	0.84							
13.....	1.18	1.03	0.91	0.82	0.74	0.66	0.60				
18.....		1.35									
19.....	1.31	1.07	0.85	0.77	0.68	0.59					
20.....		1.07									
22.....				0.98	0.94						
25.....	1.11	0.97	0.92	0.80	0.71						
26.....			0.68	0.59	0.49	0.40	0.32				
Means.....	1.22	1.09	0.87	0.80	0.71	0.55	(0.46)				
P. M.											
August 10.....		1.15									
19.....		1.20									
Means.....		(1.18)									

¹ For a description of exposures of instruments and details of methods of observation see this REVIEW, December, 1914, 42: 648.

In Table 2, column 2 gives the daily totals of solar and sky radiation received on a horizontal surface at the American University during August, 1915. The measurements were made with a Callendar recording pyrheliometer as described in the REVIEW for March, 1915, 43:100. Table 2, column 3, gives the daily departures from the normals published in the same number of the REVIEW, page 109, Table 4.

The "Percentage of possible sunshine," and the "Average cloudiness," given in columns 5 and 6 of Table 2, have been taken from the records of the observatory at the Central Office of the Weather Bureau. The monthly mean percentage of possible sunshine is 3 per cent below the normal for August.

The above data unite in showing less than the usual number of hours of sunshine, and solar radiation intensities below the normal for the month, during August, 1915. The radiation deficiency was greatest during the third decade.

TABLE 2.—Daily totals and departures of solar and sky radiation at Washington, D. C., during August, 1915.

[Gram-calories per square centimeter of horizontal surface.]

Day of month.	Daily total.	Departure from normal.	Excess or deficiency since first of month.	Percentage of possible sunshine.	Average cloudiness.
August 1.....	Gr.-cal. 401	Gr.-cal. - 91	Gr.-cal. - 91	Per cent. 61	0-10. 4
2.....	512	- 22	- 69	49	5
3.....	368	-120	- 189	45	7
4.....	480	- 8	- 195	60	6
5.....	349	-135	- 330	57	7
6.....	497	- 15	- 315	61	5
7.....	593	-114	- 301	82	3
8.....	438	- 39	- 240	63	4
9.....	442	- 32	- 272	50	6
10.....	535	- 63	- 209	77	4
11.....	311	-158	- 367	10	9
12.....	213	-254	- 621	25	9
13.....	535	- 71	- 550	88	3
14.....	557	- 95	- 455	81	3
15.....	411	- 48	- 503	38	7
16.....	517	- 61	- 442	79	5
17.....	258	-196	- 638	2	9
18.....	559	-108	- 530	90	4
19.....	616	- 167	- 363	100	0
20.....	489	- 43	- 320	73	5
Decade departure.....			- 111		
21.....	189	-255	- 575	18	8
22.....	378	- 63	- 638	53	6
23.....	514	- 75	- 563	96	3
24.....	517	- 81	- 482	73	3
25.....	561	-129	- 354	100	0
26.....	492	- 61	- 293	99	3
27.....	187	-241	- 534	9	10
28.....	80	-346	- 580	0	10
29.....	380	- 43	- 923	45	7
30.....	403	- 18	- 941	52	7
31.....	478	- 60	- 881	54	6
Decade departure.....			- 553		
Total excess or deficiency since first of year.....			-2,081		